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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief

MONTHLY NEWS LETTER

APRIL 20, 1928

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: THE OFFICE OF ACCOUNTS CALLS OUR :
: ATTENTION TO THE FAILURE TO SHOW APPRO- :
: PRIATION SYMBOL NUMBERS ON TRANSPORTATION :
: REQUESTS. THESE NUMBERS SHOULD BE PLACED :
: ON BOTH THE ORIGINAL AND THE CARBON COPY. :
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: REQUISITIONS FOR TIRES AND TUBES :
: NEEDED DURING THE FIRST QUARTER OF THE :
: FISCAL YEAR 1929 ARE DUE MAY 1. :
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W. W. McLAUGHLIN VISITED THE SANTA CLARA RIVER VALLEY, CALIFORNIA, TO ASCERTAIN THE EXTENT OF DISASTER DUE TO FAILURE OF THE ST. FRANCIS DAM, AND HAS PREPARED THE FOLLOWING NOTES:

THE CIVIL ENGINEER IS INTERESTED PRIMARILY IN THE CAUSE OF THE FAILURE, WHILE THE AGRICULTURAL ENGINEER IS INTERESTED IN RESULTS FOLLOWING THE RUSH OF WATER WHICH FOLLOWED THE FAILURE OF THE DAM.

THE TWO OFFICIAL COMMITTEES HAVE REPORTED THE CAUSE OF THE FAILURE AS A FAULTY FOUNDATION, AND A SPECIAL COMMITTEE OF THE UNIVERSITY OF CALIFORNIA HAS BEEN APPOINTED TO DETERMINE THE EXTENT OF DAMAGE TO AGRICULTURAL LANDS.

THE EROSION THAT TOOK PLACE IS IN TWELVE MILES OR SO OF CANYON IMMEDIATELY BELOW THE DAM; AND THE TREMENDOUS DEPOSITION OF ALL KINDS OF DEBRIS ON AGRICULTURAL LANDS BETWEEN THIS CANYON SECTION AND THE OCEAN, TOGETHER WITH THE DESTRUCTION OF CITRUS GROVES, ARE THE OUTSTANDING FEATURES. TO THE DEBRIS REMOVED FROM THE CANYON SECTION THERE WERE ADDED IN THE LAST FIFTY MILES, BUILDINGS, FENCES, TREES, SHRUBBERY, TELEPHONE AND TELEGRAPH LINES, BRIDGES, AND OTHER MOVABLE MATERIAL. NOT MUCH FARM LAND WAS SERIOUSLY ERODED, BUT OVER MORE THAN HALF OF THE AREA WITHIN THE PATH OF THE FLOOD SILT, SAND, BRUSH, TREES, PARTS OF AND IN SOME CASES ENTIRE BUILDINGS WERE DEPOSITED, THE SILT AND SAND FROM A FEW INCHES TO THREE OR FOUR FEET IN DEPTH. IN A FEW SCATTERED AND SMALL AREAS DEBRIS

WAS DEPOSITED TO A DEPTH OF SIX OR EIGHT FEET. THE UNEVEN DEPOSITION OF MATERIAL AND SLIGHT EROSION LEFT MUCH OF THE FARM LAND TOO UNEVEN TO BE IRRIGATED WITHOUT RELEVELING. THE COST OF THIS RELEVELING AND THE REMOVAL OF DEBRIS WILL RANGE FROM A FEW DOLLARS TO AS MUCH AS ONE THOUSAND DOLLARS PER ACRE. IRRIGATION, GAS, AND OTHER PIPE LINES WERE DESTROYED, AS WERE ALSO HIGHWAYS AND ROADS. DOMESTIC AND IRRIGATION WELLS FILLED UP, AND FARM MACHINERY OF ALL KINDS AND MANY AUTOMOBILES WERE DAMAGED OR DESTROYED.

CITRUS GROVES OWING TO THEIR SHALLOW ROOTS AND LOW SQUATTY FOLIAGE WERE DAMAGED MOST BY FIRST CATCHING FLOATING MATERIAL AND THEN BEING UPROOTED AS THE GROUND SOFTENED. YOUNG TREES WERE BENT OVER AND IN ONLY A FEW CASES UPROOTED. PALM TREES, ON THE OTHER HAND, CAME THROUGH UNSCATHED, AS THEY DID THROUGH THE BERKELEY FIRE.

THE PROPERTY DAMAGE IS GREAT. SOME OF THE LANDS WERE VALUED AT FROM \$3,000 TO \$3,500 PER ACRE AS A MAXIMUM, AND AS LOW AS \$150 PER ACRE. PRELIMINARY ESTIMATES STATE 376 HOMES DESTROYED OR SERIOUSLY DAMAGED. IN VENTURA COUNTY ALONE IT IS ESTIMATED THAT ABOUT 10,000 ACRES WERE MORE OR LESS DAMAGED.

THE CITY OF LOS ANGELES IS ASSUMING THE RESPONSIBILITY OF REHABILITATION OF THE AGRICULTURAL LAND. WHEN THE AREA WAS VISITED THE CITY WAS USING TRACTORS, STEAM-SHOVELS, AND OTHER MACHINERY IN CLEARING AWAY DEBRIS, AND HAD A FORCE OF MEN ESTIMATED AT 10,000 CLEARING THE LANDS. IT IS NOT POSSIBLE AT THIS TIME TO GIVE AN ESTIMATE OF THE COST OF THIS WORK. IT IS TOO EARLY TO PREDICT JUST WHAT DAMAGE WAS CAUSED TO GROWING CROPS. THE LOSS OF LIFE IS ESTIMATED AT ABOUT 400 TO 500, AND THE PROPERTY DAMAGE AT FROM 10 TO 20 MILLION DOLLARS.

PREPARATIONS ARE UNDER WAY FOR THE ANNUAL CONVENTION OF THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS TO BE HELD IN WASHINGTON, JUNE 19-22. THE MEMBERS LOCATED IN WASHINGTON AND VICINITY HAVE BEEN DRAFTED INTO COMMITTEES TO TAKE CARE OF THE DIFFERENT PHASES OF THE PREPARATORY WORK. IT IS EXPECTED THAT A GREAT MANY MEMBERS WILL BRING THEIR FAMILIES AND MAKE THIS TRIP THEIR PRINCIPAL VACATION TRIP, THEREFORE WE LOOK FOR A RATHER LARGE ATTENDANCE. M. C. BETTS HAS COMPLETED AN ATTRACTIVE PROSPECTUS REGARDING THE CONVENTION WHICH WILL BE READY FOR DISTRIBUTION SOON.

GEORGE R. BOYD IS ENGAGED, WITH THE COOPERATION OF THE MOTION PICTURE OFFICE, IN PREPARING A FILM ON LANDCLEARING. SOME PICTURES ARE NOW BEING TAKEN IN GEORGIA AND NORTH CAROLINA. LATER, LANDCLEARING OPERATIONS IN THE NORTHWESTERN STATES WILL BE TAKEN AND THE FILM PROBABLY THEN COMPLETED AT THE BELTSVILLE, MD. FARM OF THE BUREAU OF ANIMAL INDUSTRY, WHERE SOME EXTENSIVE LANDCLEARING OPERATIONS ARE ABOUT TO BE STARTED. THIS FILM WILL DEAL NOT ONLY WITH EXPLOSIVES BUT ALSO OTHER LANDCLEARING METHODS SUCH AS THE USE OF MACHINERY, POISONING OF GROWING TREES, ETC.

G. A. CUMINGS, WHO HAS BEEN ENGAGED FOR THE LAST YEAR OR SO IN STUDYING THE PROBLEM OF DEVELOPING SUITABLE MACHINERY FOR DISTRIBUTING FERTILIZERS, HAS GONE TO COLORADO WITH A REPRESENTATIVE OF THE BUREAU OF PLANT INDUSTRY TO TRY OUT DEVICES THAT HAVE BEEN DEVELOPED WHICH HAVE FOR THE OBJECT THE DROPPING OF FERTILIZER AND SUGAR BEET SEED TOGETHER AND WITH A PREDETERMINED RELATION TO EACH OTHER AS TO LOCATION.

F. T. CAHILL OF MASSACHUSETTS WAS APPOINTED ARCHITECTURAL DRAFTSMAN EFFECTIVE APRIL 2. MR. CAHILL WILL WORK FOR THE PRESENT IN THE WASHINGTON OFFICE IN CONNECTION WITH FARM STRUCTURES.

EFFECTIVE APRIL 1, HEADQUARTERS OF B. S. CLAYTON WAS MOVED FROM CLEVELAND, MISS., TO STUTTGART, ARK. MR. CLAYTON WILL TAKE UP AN EXTENSIVE FIELD STUDY OF RICE IRRIGATION AS PRACTICED IN THE STUTTGART REGION OF ARKANSAS, GIVING ESPECIAL ATTENTION TO PUMPING EQUIPMENT AND PUMPING OPERATIONS IN THE HOPE OF DEVELOPING A LESS EXPENSIVE APPLICATION OF WATER TO THE RICE CROP. THIS STUDY IS TO BE MADE IN COOPERATION WITH THE ARKANSAS AGRICULTURAL EXPERIMENT STATION.

CARL ROHWER REPORTS THAT A COMPARISON OF THE MEAN OBSERVED AND COMPUTED EVAPORATION FROM THE COPPER-LINED RESERVOIR, THE U.S.G.S. FLOATING TANK, THE COLORADO TYPE BURIED TANK, AND THE U. S. WEATHER BUREAU CLASS A LAND PAN FOR THE 1926 AND 1927 OBSERVATIONS, SHOWS THAT THE OBSERVED RESULTS FROM THESE TANKS ARE RESPECTIVELY 30.0 PER CENT LESS, 0.5 PER CENT GREATER, 2.1 PER CENT LESS AND 1.2 PER CENT GREATER THAN THE COMPUTED RESULTS.

THE RATIOS OF THE OBSERVED LOSSES FROM THE SMALL TANKS TO THE OBSERVED EVAPORATION FROM THE LARGE RESERVOIR SHOW THAT THE OBSERVED EVAPORATION FROM THE U.S.G.S. FLOATING TANK, THE COLORADO TYPE BURIED TANK AND THE U.S. WEATHER BUREAU CLASS A LAND PAN ARE RESPECTIVELY 1.282, 1.233 AND 1.399 TIMES THE OBSERVED EVAPORATION FROM THE LARGE RESERVOIR. IN MAKING A SIMILAR COMPARISON AT THE DENVER LABORATORY, SLEIGHT FOUND THE FOLLOWING RATIOS: 1.125, 1.259 AND 1.421, WHEN COMPARING THE RESULTS FROM SIMILAR TANKS TO THE RESULTS FROM A TANK 12 FEET IN DIAMETER. THE AGREEMENT IS QUITE CLOSE EXCEPT IN THE CASE OF THE FLOATING TANK RATIOS WHICH ARE NOT FOR EXACTLY SIMILAR CONDITIONS. THE CLOSE AGREEMENT OF THE OTHER RATIOS INDICATES THAT SLEIGHT'S ASSUMPTION AS TO THE DIMINISHING EFFECT OF AREA ON THE EVAPORATION PER UNIT OF AREA AS THE SIZE OF THE WATER SURFACE INCREASES IS PROBABLY CORRECT.

RALPH L. PARSHALL HAS SUBMITTED RESULTS OF RATINGS ON TWO IMPROVED VENTURI FLUMES IN ARKANSAS VALLEY, COLORADO, AS FOLLOWS:

12-Ft. IMPROVED VENTURI FLUME, OTERO DITCH.

<u>CURRENT METER</u>	<u>COMPUTED</u>	<u>DEVIATION</u>	<u>SUBMERGENCE</u>
DISCHARGE,	DISCHARGE,	PER CENT	PER CENT
SEC.-FT.	SEC.-FT.		
23.7	24.4	2.9	FREE FLOW
97.0	99.9	2.9	" "
.39.8	41.9	5.3	" "

30-FT. IMPROVED VENTURI FLUME, HOLBROOK CANAL.

<u>CURRENT METER</u>	<u>COMPUTED</u>	<u>DEVIATION</u>	<u>SUBMERGENCE</u>
DISCHARGE, SEC.-FT.	DISCHARGE, SEC.-FT.	PER CENT	PER CENT
75.2	75.9	0.9	82.5
248.0	178.7	28.0	97.7
58.7	60.0	2.2	FREE FLOW
155.9	154.6	0.8	83.5
287.4	298.3	3.8	79.0
65.2	72.0	11.0	FREE FLOW
62.5	64.8	3.7	" "

MR. PARSHALL STATES THAT THE COMPUTED DISCHARGE FOR FREE-FLOW CONDITION OF BOTH FLUMES IS MERELY THE APPLICATION OF OUR GENERAL FREE-FLOW LAW. FOR SUBMERGED FLOW ON THE 20-FT. FLUME A CORRECTION TABLE HAS BEEN PREPARED BASED ON WORK DONE AT THE BELLVUE LABORATORY IN OUR STUDY OF THE 4-FT. FLUME. IT WILL BE NOTED THAT THE EXTENSION OF THESE DATA TO FIVE TIMES THE SIZE OF THE EXPERIMENTAL FLUME SEEMS TO SHOW A FAIRLY CONSISTENT AGREEMENT, WITH THE EXCEPTION OF THE CASE WHERE THE SUBMERGENCE WAS 97.7 PER CENT. LABORATORY EXPERIENCE INDICATES THAT FOR EXTREMELY HIGH SUBMERGENCE LARGE ERRORS CAN BE EXPECTED.

S. J. DENNIS WHO SPENT SEVERAL MONTHS WITH THE GYPSY MOTH DIVISION OF THE BUREAU OF ENTOMOLOGY, MAKING TESTS AND IMPROVEMENTS IN THE HIGH POWER SPRAYING EQUIPMENT USED BY THAT DIVISION, HAS PREPARED A REPORT COVERING THE WORK DONE. AMONG THE IMPROVEMENTS EFFECTED ARE: THE DIVIDING OF THE SOLUTION TANK INTO TWO COMPARTMENTS WHICH ARE USED ALTERNATELY, PERMITTING CONTINUOUS SPRAYING WITHOUT INTERRUPTIONS FOR REFILLING TANK; MORE EFFECTIVE STRAINERS, AND PRESSURE REGULATING VALVES.

TO PROVIDE MEANS FOR STUDYING THE PROBABLE EFFECT OF NEW ENGLAND WINTERS ON CERTAIN PARASITES OF THE GYPSY MOTH, MR. DENNIS HAS RECENTLY DESIGNED SPECIAL REFRIGERATING EQUIPMENT FOR THE BUREAU OF ENTOMOLOGY, BY MEANS OF WHICH VERY LOW TEMPERATURES MAY BE APPLIED TO THE SURFACE OF THE GROUND IN WHICH THE PARASITES ARE HIBERNATING.

T.A.H. MILLER LAST MONTH CONSULTED WITH PROFESSOR SEITZ AT BLACKSBURG, VA., IN REGARD TO THE EXTENSION SERVICE OF V.P.I. SUPPLEMENTING THEIR PLANT-SERVICE WITH DRAWINGS OF THE FARM BUILDINGS PREPARED BY THIS DIVISION. HE ALSO EXAMINED THE PLANS FOR AN APPLE PACKING PLANT WHICH IS TO BE BUILT THIS SUMMER AT WINCHESTER, VA.

M.A.R. KELLEY HAS RETURNED TO WASHINGTON AFTER CLOSING UP THE INVESTIGATION OF SWEET POTATO STORAGE AT MELFA, VIRGINIA, AND IS PREPARING A REPORT OF THE RESULTS.

